Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method [[of]] for controlling a data transmission session by a sender to a receiver over a communications network, comprising:

receiving by the sender from the receiver via the communications network a plurality of data transmission acknowledgements, each of the plurality of data transmission acknowledgements including an indication of an amount of data delivered to the receiver;

generating by the sender a first connection rate estimate of network share using based on the indication of the amount of data delivered to the receiver in each of the plurality of acknowledgements; and

setting by the sender a data transmission control parameter using based on the first connection rate estimate.

2. (Currently Amended) The method of claim 1, wherein generating by the sender of a connection rate estimate further comprises:

generating a rate sample when an acknowledgement arrives using informationbased on the indication in the acknowledgement regarding [[an]] the amount of data received by the receiver [[data]]and an acknowledgement inter-arrival time; and

exponentially averaging the rate sample with a previous rate sample to produce smoothed rate estimate using a filter with time varying coefficients.

3. (Currently Amended) The method of claim 1, further comprising:

generating a second connection rate estimate by the sender;

determining by the sender a cause of packet loss using the first connection rate estimate and the second connection rate estimate; and

setting by the sender a congestion window and a slow start threshold control parameter using the determination of the cause of packet loss.

4. (Original) The method of claim 3, wherein determining by the sender a cause of packet loss further comprises:

calculating a ratio of expected throughput to achieved throughput;

determining the cause of packet loss to be from congestion if the ratio exceeds a threshold value; and

determining the cause of packet loss to be from data transmission errors if the ratio of expected to achieved throughput is below the threshold value.

5. (Currently Amended) The method of claim 3, wherein the first connection rate estimate is a bandwidth estimate, the method further comprising:

generating a plurality of bandwidth samples using acknowledgment pairs taken from the plurality of acknowledgements; and

generating [[the]]a bandwidth estimate using a low pass filter and the plurality of bandwidth samples.

6. (Currently Amended) The method of claim 3, wherein the first connection rate estimate is a rate estimate, the method further comprising:

generating a plurality of rate estimates using based on the indication of the amounts of data acknowledged during sampled time intervals; and

generating the first connection rate estimate by applying a low pass filter to the plurality of rate estimates.

7. (Original) The method of claim 6, further comprising adapting the sampled time intervals using a perceived network congestion level, the perceived congestion level determined from a difference between an expected throughput and an achieved throughput of data from the sender to the receiver.

8. (Original) The method of claim 6, further comprising setting the congestion window and the slow start threshold during startup of a connection between the sender and the receiver over the communications network.

9. (Original) The method of claim 1, wherein the data transmission session is for video data, the method further comprising:

establishing a data connection between the sender and the receiver via the communications network;

establishing a data control connection between the sender and the receiver;

transmitting by the sender to the receiver video data via the data connection; and

receiving by the sender from the receiver the acknowledgements via data control connection.

10. (Currently Amended) [[he]]The method of claim 9, wherein the acknowledgements include data control packets, the method further comprising:

determining by the sender a bandwidth estimate using the data control packets; and

altering by the sender a data transmission rate and a bitrate of the transmitted video data.

11. (Currently Amended) A data processing apparatus for controlling a data transmission session by a sender to a receiver over a communications network, comprising:

a processor; and

a memory coupled to the processor, the memory having ~~program instructions~~ a computer readable medium encoded with computer executable instructions executable by the processor stored therein, the program instructions comprising:

receiving by the sender from the receiver via the communications network a plurality of data transmission acknowledgements, each of the plurality of data transmission acknowledgements including an indication of an amount of data delivered to the receiver;

generating by the sender a first connection rate estimate of network share ~~using~~ based on the indication of the amount of data delivered to the receiver in each of the plurality of

acknowledgements; and

setting by the sender a data transmission control parameter using based on the first connection rate estimate.

12. (Currently Amended) The data processing apparatus of claim 11, wherein the program instructions for generating by the sender of a connection rate estimate further comprise:

generating a rate sample when an acknowledgement arrives using information based on the indication in the acknowledgement regarding [[an]]the amount of data received by the receiver data and an acknowledgement inter-arrival time; and

exponentially averaging the rate sample with a previous rate sample to produce smoothed rate estimate using a filter with time varying coefficients.

13. (Currently Amended) The data processing apparatus of claim 11, the program instructions further comprising:

generating a second connection rate estimate by the sender;

determining by the sender a cause of packet loss using the first connection rate estimate and the second connection rate estimate; and

setting by the sender a congestion window and a slow start threshold control parameter using the determination of the cause of packet loss.

14. (Original) The data processing apparatus of claim 13, wherein the program instructions for determining by the sender a cause of packet loss further comprise:

calculating a ratio of expected throughput to achieved throughput;

determining the cause of packet loss to be from congestion if the ratio exceeds a threshold value; and

determining the cause of packet loss to be from data transmission errors if the ratio of expected to achieved throughput is below the threshold value.

15. (Currently Amended) The data processing apparatus of claim 13, ~~wherein the first connection rate estimate is a bandwidth estimate,~~ the program instructions further comprising:

generating a plurality of bandwidth samples using acknowledgment pairs taken from the plurality of acknowledgements; and

generating the bandwidth estimate using a low pass filter and the plurality of bandwidth samples.

16. (Currently Amended) The data processing apparatus of claim 13, ~~wherein the first connection rate estimate is a rate estimate,~~ the program instructions further comprising:

generating a plurality of rate estimates ~~using~~ based on the indication of the amounts of data acknowledged during sampled time intervals; and

generating the first connection rate estimate by applying a low pass filter to the plurality of rate estimates.

17. (Original) The data processing apparatus of claim 16, the program instructions further comprising adapting the sampled time intervals using a perceived network congestion level, the perceived congestion level determined from a difference between an expected throughput and an achieved throughput of data from the sender to the receiver.

18. (Original) The data processing apparatus of claim 16, the program instructions further comprising setting the congestion window and the slow start threshold during startup of a connection between the sender and the receiver over the communications network.

19. (Original) The data processing apparatus of claim 11, wherein the data transmission session is for video data, the program instructions further comprising:

establishing a data connection between the sender and the receiver via the communications network;

establishing a data control connection between the sender and the receiver;

transmitting by the sender to the receiver video data via the data connection; and

receiving by the sender from the receiver the acknowledgements via data control connection.

20. (Original) The data processing apparatus of claim 19, wherein the acknowledgements include data control packets, the program instructions further comprising:

determining by the sender a bandwidth estimate using the data control packets; and

altering by the sender a data transmission rate and a bitrate of the transmitted video data.

21. (New)   A method for controlling a data transmission session by a sender to a receiver over a communications network, the method comprising:

receiving by the sender from the receiver via the communications network a plurality of data transmission acknowledgements;

generating by the sender a connection rate estimate based on one or more of the plurality of acknowledgments transmitted to the sender during a specified time interval;

generating by the sender a connection bandwidth estimate;

calculating an estimate of an achieved throughput based on the connection rate estimate;

determining a cause of packet loss based on a comparison of the estimate of the achieved throughput to an expected throughput;

selecting the connection rate estimate if the comparison identifies a first cause of packet loss;

selecting the bandwidth estimate if the comparison identifies a second cause of packet loss; and

setting a data transmission control parameter based on the selected estimate.

22. (New)   The method of claim 21, wherein the first cause of packet loss is network congestion and the second cause of packet loss is error in the data transmission.

23. (New)   The method of claim 21, wherein the connection rate estimate is based on one or more indications included in the one or more of the plurality of acknowledgements

transmitted to the sender during the specified time interval, each of the one or more indications being an indication of an amount of data delivered to the receiver.

24. (New)   The method of claim 21, wherein the generating of the bandwidth estimate includes generating a plurality of bandwidth samples based on one or more acknowledgment pairs taken from the plurality of acknowledgements.

25. (New)   The method of claim 21, wherein the specific time interval is dynamically adapted based on a perceived network congestion level.